

Proposals (33–34) to conserve the name *Poo-Astragalion* and to conserve the name *Poo-Astragaletum sesamei* with a conserved type, and requests (5–7) for a binding decision on the name-giving taxa in the same names and the inversion of the name *Poo-Astragaletum sesamei*

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Abstract

The alliance name *Poo-Astragalion* has been widely used by Iberian phytosociologists for nearly fifty years to indicate a type of sheep pastures thriving on base-rich substrates. This alliance is currently classified in the order *Poetalia bulbosa* and class *Poetea bulbosae*. However, the revision of its original diagnosis highlights that this alliance name must be considered as an alternative name to the largely disused name *Medicagini-Brachypodion distachyi*. In order to stabilize the nomenclature, we propose the conservation of the traditionally used name *Poo-Astragalion*. On the other hand, the type association of the alliance (*Poo-Astragaletum sesamei*) turns out to be a superfluous name for another association neglected in the syntaxonomical literature, the *Astragalo scorpioidis-Medicaginetum truncatulae*. Hence, with the same objective of stabilizing the nomenclature, we propose the designation of a conserved neotype for the *Poo-Astragaletum sesamei* and the conservation of this name against the earlier heterotypic synonym in case of union of both associations. At the same time, we propose to complete the two names *Poo-Astragalion* and *Poo-Astragaletum sesamei* by selecting *Poa bulbosa* and *Astragalus sesameus* as the name-giving taxa, and to invert the name *Poo-Astragaletum* in accordance with its neotype (*Astragalo sesamei-Poetum bulbosae*).

(33) *Poo-Astragalion* Rivas Goday et Ladero 1970: 165–169, nom. cons. propos.

Typus: *Poo-Astragaletum sesamei* Rivas-Goday et Ladero 1970: 166–170 (holotypus).

(≡) *Medicagini-Brachypodion distachyi* Rivas-Goday et Rivas-Martínez in Rivas Goday et Ladero 1970: 165–166 (alternative name) [original form: “*Medicago-Brachypodion*”]

(34) *Poo-Astragaletum sesamei* Rivas-Goday et Ladero 1970: 166–170, nom. cons. et typus cons. propos. [original forms: “*Poo-Astragaletum*”, “*Poeto-Astragaletum sesamei*”]

Typus cons. propos.: neotypus hoc loco (see below).

(=) *Astragalo scorpioidis-Medicaginetum truncatulae* Rivas Goday et Borja 1959 nom. corr. [original form: *Astragalo scorpioidis-Medicaginetum tribuloidis* nom. inept. (Rivas Goday and Borja 1959: 475, table 2)]

Taxonomic reference: Euro+Med (2023).

Syntaxonomic reference: Mucina et al. (2016).

Abbreviations: EVC = EuroVegChecklist (Mucina et al. 2016); ICPN = 4th edition of the International Code of Phytosociological Nomenclature (Theurillat et al. 2021).

Keywords

conserved name, conserved type, Iberian Peninsula, Mediterranean grasslands, nomenclature, phytosociology, *Poetea bulbosae*, *Poo-Astragaletum sesamei*, *Poo-Astragalion*

Introduction

Rivas Goday and Ladero (1970) described validly for the first time the order *Poetalia bulbosae* Rivas Goday in Rivas Goday et Ladero 1970 for the Iberian sheep pastures known as “majadales” in Spanish (Figure 1), a word derived from the Latin “magalia” for the shepherds’ huts around which flocks of sheep shelter at night (Ferrer Benimeli 2016). The original diagnosis of the order includes the alliance *Trifolio-Periballion*, previously described by Rivas Goday (1964) for the sheep pastures thriving on siliceous substrates, and a second alliance for the sheep pastures thriving on base-rich substrates (limestone, gypsum, calcareous marl). In the text describing the latter, two different alliance names were confusedly applied to it: “*Medicago-Brachypodion*” [recte: *Medicagini-Brachypodion distachyi*, because *Brachypodium distachyon* is the only species of the genus indicated in the original diagnosis], and *Poo-Astragalion*. According to authors’ comments (Rivas Goday and Ladero 1970: 165), the *Medicagini-Brachypodion distachyi*, a name that had been previously (but invalidly; Art. 2b, 3b) proposed by Rivas Goday and Rivas-Martínez (1963: 50), would include associations moderately grazed that are intermediate between the therophytic grasslands of the “*Thero-Brachypodion*” [recte: *Trachynion distachyae* Rivas-Martínez 1978] and the more heavily grazed communities belonging to the *Poo-Astragalion*. However, only one valid association (“*Poo-Astragaletum* as. *nova*”) was described and explicitly subordinated to both alliance names in the heading of table 3 (Rivas Goday and Ladero 1970: 166). In the description of the association, the authors explain that, for the time being, all the base-rich “majadales” are included under the common and broad denomination of “*Poeto-Astragaletum sesamei*”, and in table 3 (Rivas Goday and Ladero 1970: 167, 170) a set of species are indicated as “character species of association and alliance (*Medicago-Brachypodion*) and evul. *Poetalia*” [translated from Spanish]. In this context, “evul. *Poetalia* [sic]” may be interpreted as “evolved (by grazing) *Poetalia bulbosae* pastures of the *Poo-Astragalion*”, as exposed above. The names of the two alliances were accepted by Rivas Goday and Ladero (1970), who devised the differentiation of two possible alliances, but recognized only one broad association that brings together communities belonging to

both. In this way, both alliance names become homotypic alternative names (Def. VI Note 2, Arts. 3j and 30a). Later authors ignored the name *Medicagini-Brachypodion distachyi*, even as a synonym, accepting *Poo-Astragalion* as the sole valid name for these sheep pastures on base-rich soils (e.g., Rivas-Martínez et al. 2011; Costa et al. 2012; Mucina et al. 2016). In order to stabilize the currently accepted syntaxonomy, we propose to conserve the name *Poo-Astragalion* against its alternative name *Medicagini-Brachypodion distachyi*.

The original diagnosis of the association *Poo-Astragaletum sesamei* Rivas Goday et Ladero 1970 (Rivas Goday and Ladero 1970: 166–169, table 3; see also p. 170 for the epithet of the second name-giving taxon) includes six synoptic tables corresponding to as many subassociations. Two more subassociations are indicated in text, but without a sufficient diagnosis (Arts. 2b, 7). The subassociation *astragaletosum scorpioidis* is explicitly indicated on p. 171 as a “new combination” for the “as. *Astragalus scorpioides* et *Medicago tribuloides* Rivas Goday et Borja 1958” [recte: *Astragalo scorpioidis-Medicaginetum truncatulae* Rivas Goday et Borja 1959 nom. corr. (Art. 44); *Medicago tribuloides* Desr. 1792 is a later taxonomic synonym of *M. truncatula* Gaertn. 1791], with an unambiguous reference to Rivas Goday and Borja (1959: 475, table 2). As the association described by Rivas Goday and Borja is legitimate and was published earlier, the *Poo-Astragaletum sesamei* is a superfluous name for the *Astragalo scorpioidis-Medicaginetum truncatulae* (Art. 29c). This implies the rejection of a name widely accepted by Iberian phytosociologists (e.g., Rivas-Martínez et al. 2011; Costa et al. 2012), and its replacement with a name never used by later authors. Indeed, *Astragalus scorpioides* is a rare species with scattered populations mainly in central and southeastern Spain, showing a particular ecology linked to vertic soils on blackish or greenish marls (Rivas Goday and Borja 1959). Therefore, we propose the conservation of the superfluous name *Poo-Astragaletum sesamei* against the earlier, legitimate name *Astragalo scorpioidis-Medicaginetum truncatulae*. In addition, we propose the designation of a conserved type, according to Art. 53, for the *Poo-Astragaletum sesamei*, restoring in this way the traditional use of the name.



Figure 1. Sheep pastures (*Poetalia bulbosae*) in early spring (Montes de Toledo, central Spain). Photo credit: F. Fernández-González.

Proposals

We propose to conserve the name *Poo-Astragalion* Rivas Goday et Ladero 1970 against its alternative name *Medicagini-Brachypodion distachyi* Rivas Goday et Ladero 1970, and the name *Poo-Astragaletum sesamei* Rivas Goday et Ladero 1970 against the heterotypic name *Astragalo scorpioidis-Medicaginetum truncatulae* Rivas Goday et Borja 1959 nom. corr. The second proposal is complemented by the designation of a conserved type for the *Poo-Astragaletum sesamei* Rivas Goday et Ladero 1970 that must be a neotype because the original diagnosis of the association consists of synoptic tables. Although the authors do not indicate which subassociation should be considered typical, the word “tipo” appears in the heading of table 3 before the list of localities of the subassociation *astragaletosum stellae*, that is described in the text as “very classic in Miocene marls ...” [translated from Spanish]. Hence, we select a neotype from one of the localities cited for this subassociation and fitting as much as possible its floristic combination.

Poo-Astragaletum sesamei Rivas Goday et Ladero 1970, typus cons. propos. (neotypus hoc loco). Site: Seseña, Valdemajadas, province of Toledo, Spain; geographical coordinates (WGS84): -3.64694°W, 40.07389°N; altitude: 570 m a.s.l.; slope: 0°; aspect: NE; plot size: 5 m²; substrate: Miocene greyish marls; date: 13.06.2005; total vegetation cover: 85%; author: F. Fernández-González.

Poa bulbosa 3, *Astragalus stella* 2, *Medicago minima* 2, *Leontodon saxatilis* subsp. *rothii* 2, *Astragalus sesameus* 1, *Medicago truncatula* 1, *Parentucellia latifolia* 1, *Plantago albicans* 1, *Plantago lagopus* 1, *Asterolinon linum-stellatum* 1, *Linum strictum* 1, *Helianthemum angustatum* 1, *Neatostema apulum* 1, *Aegilops geniculata* 1, *Trigonella polyceratia* +, *Convolvulus lineatus* +, *Filago pyramidata* +, *Brachypodium distachyon* +, *Valerianella coronata* +, *Scandix australis* +, *Hedypnois rhagadioloides* +, *Rostraria cristata* +, *Helianthemum salicifolium* +, *Sherardia arvensis* +, *Bombycilaena discolor* +, *Xeranthemum inapertum* +, *Bromus rubens* +, *Lagoecia cuminoides* +, *Geranium molle* +, *Vulpia ciliata* +.

Requests

The names *Poo-Astragalion* and *Poo-Astragaletum sesamei* have been inverted and completed with species epithets by many Iberian authors (e.g., Rivas-Martínez et al. 1999, 2011), without a proper justification according to ICPN rules, generating invalid names (Art. 3q) or names that must be rejected (Art. 42). Regarding the first name-giving taxon, the original diagnosis (Rivas Goday and Ladero 1970: 166–169, table 3) contains two species of the genus *Poa*: (i) *Poa bulbosa*, the name-giving taxon of the order *Poetalia bulbosae* and the most frequent species in the table; and (ii) *Poa rigida* L. [recte: *Catapodium rigidum* (L.) C. E. Hubb. in Dony], clearly less frequent

and considered by the authors as a character species of another class ("Thero-Brachypodietea"). Therefore, it seems reasonable (Recommendations 10B and 10C) that *Poa bulbosa* should be chosen as the name-giving taxon in both syntaxon names.

Despite there are six *Astragalus* species in the original diagnosis (table 3), only *A. sesameus* is considered by Rivas Goday and Ladero as a character species of both the association and the alliance, and it is in fact the most frequent species of the genus and the name-giving taxon of the association (Rivas Goday and Ladero 1970: 166–167, 170). *A. macrorhizus* is placed among the character species of the order because it is indifferent to substrate, and the other four species are considered differential species of subassociations. These are good reasons to consider *A. sesameus* as the name-giving taxon of the alliance name (Recommendations 10B and 10C).

Lastly, in the selected conserved neotype for the *Poo-Astragaletum sesamei*, *Poa bulbosa* is more abundant than *Astragalus sesameus*. Therefore, if the proposal is approved, the inversion of the name according to Art. 10b would be justified. We revised several unpublished relevés from the localities indicated in the original diagnosis of the subassociation *astragaletum stellae* and found that usually *Poa bulbosa* is the dominant species, although the aggregate cover of legume species is often higher. There are also some relevés in which the dominant plants are *Plantago albicans* or *Convolvulus lineatus*, but these must probably be referred to another association (*Plantagini albicanis-Convolvuletum lineati* Rivas-Martínez, Cantó et Sánchez-Mata in Rivas-Martínez et al. 2011: 457) belonging to the same alliance. We also checked 110 relevés retrieved from the SIVIM (2023) database, attributed by their authors to the association *Poo-Astragaletum*, and distributed across central, eastern, and southern Spain, and found that *Poa bulbosa* is the dominant species in ca. 100 relevés. In a few relevés there are other species with a cover value (in the Braun-Blanquet scale) equal to or higher than *Poa bulbosa*, like *Medicago* spp., *Trifolium* spp., *Plantago* spp. (including *Plantago albicans*), *Convolvulus lineatus*, etc. However, we could not find a single relevé in which the cover value of any *Astragalus* species is equal to or greater than that of *Poa bulbosa*. *Astragalus sesameus* is by far the most frequent species of the genus, but it is present in only 30% of the relevés.

According to Art. 10b, the alliance name cannot be inverted because *Poa bulbosa* and *Astragalus sesameus* belong to the same stratum. For the sake of nomenclatural coherence and clarity it might be desirable that the alliance and its type association have the same sequence of name-giving taxa, but such precept is not ruled in the ICPN. In fact, Art. 20 recognizes that a higher syntaxon and a next subordinate syntaxon may have the same name-giving taxa in a different sequence. In our case, there are two possible ways for the harmonization of the

alliance and association names. First, to reject the inversion of the association name, invoking Recommendation 42A to conserve the original sequence of name-giving taxa against the inverted form that would be mandatory according to Art. 10b. Second, to invoke Recommendation 42A for the conservation of the inverted form of the alliance name. Both options have pros and cons. Regarding the former option, the rationale for the inversion according to Art. 10b has been exposed in detail above, although it cannot be excluded that in the never published relevés composing the synoptic tables of Rivas Goday and Ladero (1970) dominance relationships among species were different. In fact, in the original diagnosis of the *Astragalo scorpioidis-Medicaginetum truncatulae* (Rivas Goday and Borja 1959, table 2), *Poa bulbosa* is constant, but with minimum cover values, while the dominant or co-dominant species in most relevés (six out of nine) is *Medicago truncatula*. Regarding the second option, the inverted form of the alliance name has indeed been used more often by Iberian authors for the last twenty years, but it is debatable whether Recommendation 42A may be applied in this case, because its current wording seems to be more focused on preventing name inversions, and it does not refer to the problem of harmonization of names of different rank as a possible reason for conservation. Therefore, we formulate the following requests for binding decisions according to Arts. 10b, 40b and 42, excluding the possible application of Recommendation 42A on the alliance name, but acknowledging that this Recommendation may be considered by the CCCN:

- (5) selection of the name-giving taxa *Poa bulbosa* and *Astragalus sesameus* in the name *Poo-Astragalion* Rivas Goday et Ladero 1970 (Recommendation 10C, Art. 40b)
- (6) selection of the name-giving taxon *Poa bulbosa* in the name *Poo-Astragaletum sesamei* Rivas Goday et Ladero 1970 (Recommendation 10C, Art. 40b)
- (7) inversion of the name *Poo-Astragaletum sesamei* Rivas Goday et Ladero (Arts. 10b, 42)

Author contributions

All authors performed the nomenclatural analysis, discussed the nomenclatural problems, debated the proposed solutions, and critically revised the manuscript.

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References

- Costa JC, Neto C, Aguiar C, Capelo J, Espírito-Santo MD, Honrado J, Pinto-Gomes C, Monteiro-Henriques T, Sequeira M, Lousã M (2012) Vascular plant communities in Portugal (continental, the Azores and Madeira). *Global Geobotany* 2: 1–180.
- Euro+Med (2023) The Euro+Med PlantBase – the information resource for Euro-Mediterranean plant diversity. <https://europlusmed.org/> [accessed 20th June 2023]
- Ferrer Benimeli C (2016) Diccionario de pascología. Fundación Conde del Valle de Salazar, Madrid, ES, 932 pp.
- Mucina L, Bültmann H, Dierssen K, Theurillat JP, Raus T, Čarni A, Šumberová K, Willner W, Dengler J, ... Tichý L (2016) Vegetation of Europe: hierarchical floristic classification system of vascular plant, bryophyte, lichen, and algal communities. *Applied Vegetation Science* 19 (Suppl. 1): 3–264. <https://doi.org/10.1111/avsc.12257>
- Rivas Goday S (1964) Vegetación y flórula de la cuenca extremeña del Guadiana. *Publicaciones de la Excma. Diputación Provincial de Badajoz*, Badajoz, ES, 777 pp.
- Rivas Goday S, Borja Carbonell J (1959) Posición fitosociológica de la *Astragalus scorpioides* Pourr., en la Clase *Therobrachypodietea* Br. Bl. *Anales Instituto Botánico AJ Cavanilles* 16: 473–484.
- Rivas Goday S, Ladero M (1970) Pastizales cespitosos de *Poa bulbosa* L. Origen, sucesión y sistemática. *Anales Real Academia Farmacia* 36: 139–181.
- Rivas Goday S, Rivas-Martínez S (1963) Estudio y clasificación de los pastizales españoles. *Publicaciones del Ministerio de Agricultura*, Madrid, ES, 269 pp.
- Rivas-Martínez S, Fernández-González F, Loidi Arregui J (1999) Checklist of plant communities of Iberian Peninsula, Balearic and Canary Islands to suballiance level. *Itinera Geobotanica* 13: 353–451.
- Rivas-Martínez S, Asensi A, Díez-Garretas B, Molero J, Valle F, Cano E, Costa M, Villar L, Díaz TE, Loidi J (2011) Mapa de series, geoserries y geopermaseries de vegetación de España [Memoria del mapa de vegetación potencial de España]. Parte II. *Itinera Geobotanica* 18: 5–800.
- SIVIM (2023) Sistema de información de la Vegetación Ibérica y Macaronésica. <http://www.sivim.info/sivi/> [accessed 15th July 2023]
- Theurillat JP, Willner W, Fernández-González F, Bültmann H, Čarni A, Gigante D, Mucina L, Weber H (2021) International Code of Phytosociological Nomenclature. 4th edition. *Applied Vegetation Science* 24: e12491. <https://doi.org/10.1111/avsc.12491>

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